

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1, 3-11, 13-21 and 23-30, amended herewith, remain active in the present application. Claims 2, 12, and 22 are canceled without prejudice by the present amendment.

In the outstanding Office Action, Claim 21 was rejected under 35 U.S.C. § 101; and Claims 1-30 were rejected under 35 U.S.C. § 102(b) as anticipated by Jiang et al. (U.S. Publication Number 2002/0196966 A1, herein "Jiang").

Regarding the rejection of Claim 21 under 35 U.S.C. § 101, independent Claim 21 and all its dependent claims have been amended to recite a computer readable medium as suggested by the outstanding Office Action. No new matter has been added. Accordingly, it is respectfully requested this rejection be withdrawn.

In view of the rejection of the claims on the merits, independent Claims 1, 21 and 31 have been amended to clarify the claimed invention and thereby more clearly patentably define over the cited reference. To that end, amended Claim 1 defines the subject invention in terms of a method, as follows:

1. A method for a computerized analysis of a mammogram in digital form of a breast of a patient, comprising:
  - extracting from the mammogram at least one fractal-based feature associated with a texture of a parenchyma of the breast;
  - applying said at least one fractal-based feature to at least one of a linear discriminant classifier and an artificial neural network classifier; and
  - generating a risk marker indicative of a breast disease risk for said patient based on an output of the at least one of a linear discriminant classifier and an artificial neural network classifier.

Similar changes have been introduced into independent Claims 11 and 21. Support for these changes is found in the original claims and in the original specification in paragraphs 37, 38, 46, and 54. No new matter has been added.

Turning to the applied art, Jiang discloses in paragraph [0022] an automated method for obtaining a region of interest, and for using a fractal characteristic of the image data of a bone within a region of interest using artificial neural network. Based on this single characteristic, a strength of the bone is estimated. In contrast, the amended claims are addressed to a completely different application, computerized analysis of a mammogram in digital form of computerized analysis of a mammogram in digital form of a breast of a patient. There is no indication in the prior art that the Jiang technique is applicable to any thing other than bone, and in particular, there is no teaching of applicability to soft tissue analysis such as computerized analysis of a mammogram in digital form of a breast of a patient.

Referring to the fractal characteristic, the outstanding Office Action states on page 4, last full paragraph, that Jiang discloses in paragraph [0022] a multi-fractal characteristic. However, Jiang discloses in paragraph [0022] only a single fractal characteristic of an image data is extracted using an artificial neural network. However, Jiang does not teach or suggest a multi-fractal characteristic that includes at least two linear components, as required by amended Claim 1.

Claims 11 and 21 have been amended to state features similar to those stated in amended Claim 1. Accordingly, it is respectfully submitted that amended Claims 1, 11, and 21 and each of the claims depending therefrom patentably distinguish over Jiang.

To assure withdrawal of the outstanding grounds for rejection relying on Jiang, Applicants claim benefit of priority to Applicants' priority provisional application SN 60/447,295 filed Feb. 14, 2003. Priority provisional application SN 60/447,295 provides clear support for the subject matter of the amended claims, for example as follows;  
Below are a few of the many locations where the different topics are discussed:

- Breast cancer risk using fractal based texture analysis – paragraph 1; claims 1 and 2;
- Analysis of parenchymal patterns – paragraph 8
- Linear discriminant – claim 6
- Neural network – claim 7
- Multifractal – paragraph 56

Thus, Applicants believe themselves clearly entitled to benefit of priority. When accorded benefit of priority, Jiang is rendered at most prior art under 35 USC 102(a)/103 (prior invention by another) and 35 USC 102(e)/103(c) (earlier U.S. filing date), not 35 USC 102(b)/103 (statutory bar), as the present amendment results in removal of any anticipation rejection. The 102(e)/103(c) rejection is removed because the present inventors were under a common obligation to assign to the same assignee, The University of Chicago (or its former licensing agent, ARCH Development Corp.), leaving only 35 USC 102(a)/103(c) as a possible ground for rejection based on Jiang. This latter ground for rejection is overcome by virtue of the attached declaration of Maryellen Giger, a named inventor common to the present application and the Jiang patent, in which Dr. Giger declares that the common subject matter of Jiang is her contribution to the Jiang invention, and the presently claimed invention is in fact the invention of the present inventors, including Maryellen Giger. Therefore it cannot be said that the common subject matter was the prior invention of another, removing Jiang from consideration as prior art under 35 USC 102(a)/103. Accordingly, Jiang is removed from consideration as prior art and the outstanding ground for rejection under 35 USC 102(b) has been overcome.

Consequently, in light of the above discussion and in view of the present amendment,

the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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